In Mr. Conway's words:—

> The Arctic and Antarctic regions remain for the future, and so do almost all the great mountain ranges in the world. The Alps alone are explored. The exploration of the Caucasus has been well begun, perhaps half done. Mr. Whymper has accomplished as much as one man can do in a season in the great Andes of Ecuador, but the Andes as a whole are little known. A good deal has been done in parts of the Rocky Mountains. Our New Zealand fellow-countrymen have boldly attacked the beautiful mountain fastnesses which belong to them. All these are hopeful beginnings, but the mountains of Central Africa and all the ranges of Asia are practically unknown. Thus the future of exploration is in the hands of climbers. The exploration of the Alps is a mere specimen on a small scale of the greater work which remains to be accomplished over areas incomparably vaster, and amongst ranges loftier and far more difficult than the Alps. . . . . Whilst the Himalayas have been in large part surveyed by the Indian Government, they are not, from a mountaineer's point of view, surveyed at all. No attempt has been made to give a true physical representation of the highest levels. The glaciation has been treated in the vaguest fashion and upon the ditch theory. From such work a mountain student cannot learn much. It was for this reason that I was tempted to make, in the year 1892, an expedition into the Karakoram Mountains, where are gathered together the mightiest group of glaciers in the world outside the Polar regions. The Hispar, the Biafo, and the Baltoro glaciers had for me the attraction of size as well as remoteness. The Hispar glacier was unsurveyed. The lower portions of the other two had been mapped by Colonel Godwin-Austen years ago, but their upper regions were unknown. The journey that I planned was duly carried out and resulted in the physical survey of some three thousand square miles of high mountain country. A map of the Central Asiatic mountain region lies before me as I write. It measures twelve by fifteen inches. On the same scale, the portion surveyed by me measures less than a square inch. This will give some idea of the amount of work that remains to be done in Asia by mountaineers.

The great difficulty in climbing at considerable altitudes lies in the diminished atmospheric pressure. Says Mr. Conway:—

> It is more felt in hollow places than on ridges, more on snow than rocks, more in still air than a breeze, more in sunshine than under clouds or by night. It seems probable that the healthy human body can be accustomed to altitudes up to 18,000 or 19,000 feet. Above 19,000 feet a cumulative effect of discomfort is produced.

Mr. Conway and his party reached an altitude of 22,500 feet in the journey to the Karakorams referred to above, and he thinks an altitude of 24,000 feet may eventually be attained, but it will probably not be much exceeded.

Miss A. R. Taylor describes her sojourn in Thibet in the *National Review*.

Scribner's Magazine contains an interesting article on "The Tides of the Bay of Fundy," by Mr. Gustav Kobbé. Who has not heard of these tides, and wondered at their reputed magnitude? Statistics regarding the range are often so loosely stated that the following quotation is justifiable:—

> At Grand Manan the fall is from twelve to fifteen feet, at Lubec and Eastport twenty feet, at St. John from twenty-four to thirty feet, at Monck on, on the bend of the Pelitcodiac, seventy feet, while the distance between high and low water mark on the Cobequid River is twelve miles—the river actually being twelve miles longer at high than at low water.

Under the title, "The First Artists of Europe," the Rev. S. Baring Gould gives, in *Good Words*, a well-illustrated description of the flint implements and tools, carvings on bone, horn, and ivory, sculptures, engravings, and sketches left by prehistoric reindeer hunters in caves, and beneath overhanging rocks in the valley of the Vézère, France. "The Story of the South African Diamond Fields" is told by the Rev. John Reid in the same magazine, and Mr. E. W. Abram contributes a biography of the Rev. F. O. Morris, whose volumes on "Birds" and "Butterflies and Moths" are known to all naturalists, and earned for him the name of "Gilbert White of the North."

"Bacterial Life and Light" is the title of an article by Mrs. Percy Frankland, in *Longman's Magazine*, in which the recent work that has been done on the bactericidal action of sunlight is brightly described.

NOTES.

MR. SCOTT ELLIOT has obtained a grant from the Government Grant Committee of the Royal Society for the purpose of exploring Uganda. We understand that his intention is to start from Mombassa and proceed direct to Lake Victoria Nyanza. After a short stay near the lake Mr. Scott Elliot hopes to leave for Ruwenzari, and to spend as long a time as his funds permit in exploring the botany, geology, and natural history of this mountain chain. Both Dr. Stuhlman and Dr. Baumann have been very lately in this neighbourhood, but still something of interest may be expected from Mr. Elliot's exploration.

THE works of the Cataract Construction Company at Niagara Falls are rapidly approaching completion. The tunnel is really finished, and so is the canal. The wheel-pits have had to be cut out of the solid rock. A power house is now being constructed to carry a travelling crane worked by an electric motor, the current for which will be supplied by a Westinghouse Engine and dynamo. The first of the three turbines of 5,000 horse-power has been made by the Morris Company, of Philadelphia, from designs by Faesch and Picard, of Geneva, and will be set up as soon as the electric crane is in its place. Prof. George Forbes, F.R.S., the electrical consulting engineer to the Cataract Company, has completed the plans for the electrical transmission, which will be by an alternating current. Vertical-shaft dynamos, each of 5,000 horse power, and capable of giving current in one or two phases, will be employed. It is hoped that the first of these dynamos will be built in about four months. The power will first be used at the new works of the Pittsburg Reduction Company, on the road towards Buffalo, for the production of aluminium. To hold the conductors, a roomy subway of concrete is being constructed. Cast-iron frames are built into the concrete, and brackets are fixed to them carrying insulators upon which the conductors will be supported. It will be seen from this that all the work is now well advanced, and a difficult enterprise is being brought to a successful termination.

THE exceptionally heavy cyclone which swept along the American coast on August 28 and 29, and was noted in our last issue, occasioned great loss of life and property both at sea and on land. The principal violence of the storm appears to have occurred in Georgia and South Carolina, and the fury of the wind completely swept down houses which were in the track of the hurricane. The storm was also accompanied by a tidal wave, which added immensely to the destruction on the sea-coast and on the islands in the main track of the disturbance. The wind is reported to have attained a velocity of 120 miles an hour, but much yet has to be learned from the numerous meteorological stations situated in or near to the storm's path. The cyclone was evidently an ordinary West Indian hurricane, which storms are not of uncommon occurrence at this season of the year; but it is unusual for these disturbances to maintain their full energy when they continue their course to the northward, and extend to regions well outside the tropics. This hurricane is said to have been experienced in the Bahamas three or four days before it broke with such fury on the shore of the mainland, and it is reported to have finally retreated out to sea as an ordinary gale. Just ten years ago a very severe storm traversed the south of England, and by means of ship's observations over the North Atlantic the disturbance was tracked from the tropics, along the coast of the United States, and eventually to our own shores. Doubtless the Weather Bureau of the United States will undertake a thorough and exhaustive study of the cyclone which has but just occurred.

ON the 28th ult. a hurricane passed over the more northerly of the Azores Islands, and caused great damage.

THE Rev. Leonard Blomefield, father of the Linnean Society, died at Bath on September 1, in his ninety-first year.

AN International Exposition will be held in the city of San Francisco, State of California, beginning on January 1, 1894, and continuing for six months. The general classification will be as follows:—Department A—Agriculture, food and its accessories, forestry and forest products, agricultural machinery and appliances; horticulture, viticulture, and pomology; fish, fisheries, products and apparatus of fishing. Department B—Machinery; mines, mining, and metallurgy; transportation—railway, vessels, vehicles; electricity and electrical appliances. Department C—Manufactures; liberal arts—education, literature, engineering, public works, constructive architecture, music and the drama; ethnology, archæology; progress of labour and invention. Department D—Fine arts: painting, sculpture, architecture, decoration. Department E—Isolated and collective exhibits. Mr. M. H. de Young is the Director-General and President of the Executive Committee, and all applications for space, &c., must be made to him, addressed Director-General, California Midwinter International Exposition, San Francisco, California, U.S.A.

IT is a custom to break clay vessels as a funeral rite in modern Greece, and there are proofs of the existence of similar customs among various Asiatic, African, American, and Australian peoples. Prof. N. G. Politis has investigated the origin of the practice (*Journal of the Anthropolgical Institute*, August), and has been led to conclude that it is connected with the purifications which now, as of old, form part of the funeral ritual. In a great many places, people on returning from a funeral or visiting a house of mourning, wash their hands, or are purified in some way with water, the vessels and towel used being afterwards destroyed. Prof. Politis is therefore of the opinion that the breaking of vessels is based upon two leading notions: (1) that everything used in the ritual of purification ought to be destroyed, lest the efficacy of the purificatory act be annulled through the profane use afterwards of things employed in its performance; and (2) that objects given to the dead must be destroyed, to guard against the possibility of their use for other purposes which annul their dedication to the dead, the belief being that all chattels must perish by fracture or mutilation of some kind in order to serve the purpose of a dead person, becoming through such mutilation unfit for living use.

IN "Midsummer Night's Dream," Shakespeare refers to "Russet-pated choughs many in sort, rising and cawing at the gun's report," but there appears to be a difference of opinion among ornithologists as to the bird so distinguished. So far back as 1871 Mr. J. E. Harting, in his "Ornithology of Shakespeare," interpreted the expression as meaning the gray-headed jackdaw, but the reviewer of the book in these columns remarked at the time that "without doubt the poet had in his mind the real Cornish chough, and the expression is quite accurate. 'Russet-pated' is having red *pattes*, or feet (*e.g.* the heraldic *croix pattée*, not a red *pate* or head), a feature equally inapplicable to chough or daw, while the red feet of the former are as diagnostic as can be." Mr. Harting returns to the subject in the *Zoologist* for September, and, in support of his view that the gray-headed jackdaw, and not the red-legged chough, is referred to, brings forward evidence to show (1) that the name *chough* was not exclusively bestowed upon the bird with red bill and red legs, but was also applied to the jackdaw; (2) that "pated" means "headed," and cannot be read "patted" for "footed"; (3) that "russet" is not red, though it may be reddish and is often used for gray; and (4) that the habit of the birds referred to by Shakespeare as "many in sort, rising and cawing," indicate a mixed flock of jackdaws and rooks, and not choughs and rooks.

WE have received from the *Deutsche Seewarte* vol. xv. of *Aus dem Archiv*, containing the report upon the work of that institution for the year 1892. In the department of maritime meteorology, especially, much activity has been shown, notwithstanding the serious obstacles experienced by the lamentable cholera epidemic. The various publications under this head include sailing directions for the Indian Ocean, daily synoptic weather charts for the North Atlantic (in conjunction with the Meteorological Institute in Copenhagen), and the collection of observations made beyond the sea. The observations received from ships alone amounted to an aggregate of 192 years, and these are used in the discussion of the meteorology of the ocean, which for this purpose is divided, according to the usual practice, into squares of ten degrees of latitude by ten of longitude. The department of weather telegraphy is also conducted with marked activity, and daily and monthly reports are regularly published. In addition to these operations, and the testing of numerous meteorological instruments and chronometers, many valuable discussions are undertaken, some of which are contained in the monthly *Annalen der Hydrographie*, &c. We shall refer later on to one or two of the special discussions included in the present volume.

AS regards the behaviour of pathogenic forms in vegetable tissues, Russell states that, with but few exceptions, they were unable to exist for any length of time under these conditions. Lominsky, however, who conducted no less than 300 experiments on the vitality of anthrax, the typhoid bacillus, and staphylococcus pyogenes aureus in plants (Wratsch 1890), found that these organisms were not only able to exist but to multiply. Of especial interest was the behaviour of the anthrax bacillus when inoculated into agapanthus leaves. The bacilli grew into long threads, and at the end of seven days signs of spore formation were detected, both spores and threads being found later, not only at the point of inoculation, but within the healthy cells of the soft part of the leaf; moreover, after forty-two days' residence in the leaf, their virulence, as shown by inoculation into animals, was in no way impaired. Although saprophytic bacteria, as well as pathogenic forms, have not so far been found capable of inducing any disease in plants when artificially introduced, yet bacteria have been isolated which are especially pathogenic to plants. Amongst these may be mentioned the *B. hyacinthi* of Wakker affecting the bulbs and leaves of hyacinths, and the more recent *B. hyacinthi septicus* of Heinz, which affects also the flower clusters. The pear blight has been traced to a distinct bacillus, and Savastano describes a bacillus (*B. olcæ-tuberculosis*) causing destruction of tissue and formation of spaces in the tissue of numerous fruit trees, whilst closely allied to this form is a bacillus which produces tumours on the Aleppo pine. The list, although limited, is receiving constant additions, and there is a wide field open for researches on the bacterial diseases of plants, which may, moreover, be prosecuted without the intervention at present of the anti-vivisectionist!

HERR F. VON HEFNER-ALTENECK, in the *Electrotechnische Anzeiger*, makes a provisional statement about a system of electric control of clocks which appears likely to solve this much-attempted problem in a satisfactory manner. The main difficulty up to the present has been the necessity for a special wire system, central station, and attendance, the cost of which could not be defrayed by the limited public likely to require a luxury of this sort. Whenever, on the other hand, an enterprise was started with faulty mains and insufficient staff, the system was doomed to fail and to create a prejudice against the principle itself. All these difficulties are avoided by incorporating the control system with the electric light or power installation already existing. This is done by means of a clock invented by Herr von Hefner-Alteneck, which is placed in circuit like an ordinary incandescent lamp. It is kept wound up by the current, at an annual cost not exceeding that of one 16-candle lamp burning for ten hours, *i.e.* about 4*d.* In case of interruption of circuit, the clock will go about twelve hours independently of the current. The control is effected once a day by a momentary drop of the circuit potential by about 6 or 10 volts at 5 A.M., which has the effect of pointing all the clocks in the circuit at 5. The effect upon the lamps is inappreciable. The control can be performed by hand in the dynamo room, or automatically through the assistance of an observatory. The General Electric Company of Berlin proposes shortly to embody the system in its enterprises.

MESSRS. GAUTHIER-VILLARS have issued their quarterly list of new publications.

WE have received the Transactions and Proceedings of the New Zealand Institute, vol. xxv. 1892.

THE report and proceedings of the Manchester Field Naturalists' and Archæologists' Society has been issued for the year 1892.

THE Geological Survey of Alabama has issued a report, by Mr. A. M. Gibson, on the "Geological Structure of Murphree's Valley." The report deals particularly with the mineral resources of the region.

THE University Correspondence College Press has published the fourth Intermediate Science and Preliminary Scientific Directory, containing the papers set at the examinations in July last, and the answers fully worked.

THE Toynbee Hall Natural History Society recently organised an excursion to Jersey. Seventeen members took part in the expedition, and represented three sections—Botany, Geology, and Zoology. The whole of the coast and much of the interior was visited. At the monthly meeting of the Society, held Monday, September 4, many of the results of a fortnight's natural history work in the island were exhibited.

TWO new volumes have been added to the Aide-Mémoire series edited by M. Léauté, and published by Messrs. Gauthier-Villars and M. G. Masson. "Accidents de Chaudières," by M. F. Sinigaglia, deals with the causes and prevention of boiler accidents, and M. H. Laurent, in his "Théorie des Jeux de Hasard," gives a number of problems connected with games of chance.

MESSRS. JOHN BARTHOLOMEW AND CO., Edinburgh, have published a "Naturalists' Map of Scotland," showing (*a*) Faunal divisions and lighthouses; (*b*) Height of land and depth of sea; (*c*) Deer forests and salmon rivers; (*d*) Areas of moorland, hill pastures, and other uncultivated lands; (*e*) Areas of cultivated land. The map is excellently lithographed, and will doubtless be appreciated by the tourist as well as by the naturalist.

MR. WILLIAM F. CLAY, Edinburgh, has published, as an Alembic Club reprint, the two papers by Cavendish, which appeared in the *Philosophical Transactions* under the title "Experiments on Air." The first paper appeared in 1784, and contains an account of Cavendish's researches into the composition of water; the second paper, published in the following year, contains the description of his discovery of nitric acid.

IN 1891 a biological survey of parts of California, Nevada, Arizona, and Utah was conducted by the U.S. Department of Agriculture, Dr. C. Hart Merriam being in charge. The second part of the report on the results of this—the Death Valley Expedition—has just been published, and forms the seventh number of "North American Fauna." It consists of the special reports on birds, reptiles, batrachians, fishes, molluscs, insects, and the shrubs of the desert region, cacti and yuccas. The first part of the report, containing the narrative of the expedition, discussion of life-zones, and the list of mammalia, has not yet appeared.

TOO great praise cannot be given to the authorities of the Natural History Museum for the excellent series of guide-books that are being issued from time to time by the various departments. The latest addition to this series is a guide to Sowerby's models of British Fungi in the department of botany, prepared by Mr. Worthington G. Smith. The Sowerby collection was acquired by the Museum in 1844, and consists of more than two hundred models made of unbaked pipeclay. Mr. Smith's description of the fungi should be widely distributed, for it will enable the public to distinguish easily the edible and poisonous species.

THE benefits derived by science from the Smithsonian Institution are almost incalculable. Memoirs, monographs, and bibliographies of a most important character are distributed to private individuals and libraries with so free a hand that every one interested in the matters with which they deal must learn of their publication. A very important volume has recently been received from the institution; it is "A Select Bibliography of Chemistry," by Mr. Henry Carrington Bolton. The volume gives the titles of practically all the books on chemistry published in Europe and America between 1492 and 1892. It contains works in every department of both pure and applied chemistry. Academic dissertations, however, and theses, are not, as a rule, included, neither is the voluminous literature of periodicals. The works are arranged into seven sections as follows:—(1) Bibliography, (2) Dictionaries, (3) History, (4) Biography, (5) Chemistry, pure and applied, (6) Alchemy, (7) Periodicals. Section v. is more extensive than the other six combined. Besides pure chemistry, the book comprises works in every department of chemistry applied to the arts, but not to the arts themselves. In each section, with the exception of those of biography and periodicals, the titles are arranged alphabetically by authors. Altogether, 12,031 titles have been indexed, of which 4507 are in German, 2765 in English, and 2141 in French. In addition to the author's index, there is a subject-index which very considerably facilitates reference. For the conception of the bibliography and the completion of a stupendous work, Mr. Bolton deserves the thanks of all chemists. A debt of gratitude is also due to the Smithsonian Institution for publishing so useful a volume.

A FURTHER communication upon the manufacture of oxygen from the air by the agency of calcium plumbate, Ca_2PbO_4, the compound formed by lime with peroxide of lead, is contributed by Herr G. Kassner to the current number of the *Chemiker Zeitung*. Oxygen is now so important a commercial article that any new mode of advantageously preparing it upon a large scale must of necessity be of considerable interest. The success of the "Brin" method of isolating it indirectly from the atmosphere by the agency of barium peroxide has given rise to several attempts to discover some other substance capable of yielding oxygen of an equal degree of purity and under equally favourable conditions as regards cost of plant and working. Calcium plumbate would appear to possess several properties capable of rendering it an efficient substitute for barium peroxide, and Herr Kassner even claims for it a distinct superiority.

Whether this be indeed the case or not, can of course only be tested by actual working during a sufficiently long period of time. The method as described by Herr Kassner is briefly as follows. Calcium plumbate in the form of spongy porous pieces is first exposed to the action of moist furnace gases, which have been previously well washed, at a temperature not exceeding 100° C. The calcium plumbate under these conditions rapidly absorbs the carbon dioxide contained in the furnace gases, becoming thereby decomposed with formation of calcium carbonate and free peroxide of lead; that is to say, the acid properties of carbon dioxide are superior to those of lead peroxide, and so the former expels the latter from its state of combination with lime. This decomposition is unaccompanied by any change of form, the spongy pieces of material remaining precisely the same in shape and texture, like the pseudomorphs of mineralogy. The product of this first operation, when fully saturated with carbon dioxide, is transferred to a strongly constructed retort heated to redness, when oxygen is rapidly disengaged. The evolution of the oxygen is facilitated by leading superheated steam through the retort. When the peroxide of lead has yielded up most of its available oxygen, carbon dioxide commences to be evolved, and subsequently the issuing gas is pure carbon dioxide, which is collected separately. The carbon dioxide evolved during the intermediate phase is removed from the oxygen by allowing the gases to pass over a further quantity of calcium plumbate, which absorbs it entirely, allowing only pure oxygen to escape. The last phase in which pure carbon dioxide is evolved is carried on to completion, after which the residue is readily reconverted into calcium plumbate, for use in a subsequent operation, by driving a current of air through the retort.

IN addition to Kassner's process, above described, another has been patented by Peitz, in which instead of furnace gases pure carbon dioxide is employed. Le Chatelier has also recently published a paper upon the subject, in which, however, he does not appear to have been acquainted with the whole of Kassner's publications. Le Chatelier concludes that calcium plumbate gives up its available oxygen by merely heating it to a temperature of 200° higher than that employed in Brin's process in the case of barium peroxide, and that the heated residue absorbs oxygen from the air again much more rapidly than the latter substance. Kassner has already previously stated these facts, and now asserts that his indirect method possesses two great advantages over the direct one proposed by Le Chatelier, namely, that a lower temperature is required, and a consequent saving of fuel and wear of retorts effected, and that pure carbon dioxide is obtained as a very valuable by product. The very fact, however, that there are so many possible modes of treating calcium plumbate, goes far to indicate that there is at least some ground for the proposal to employ it as a substitute for barium peroxide.

NOTES from the Marine Biological Station, Plymouth.—Last week's captures include the Polychæte *Eunice Harassii*, the Decapod *Pirimela denticulata*, and the Opisthobranchs *Hermæa bifida*, *Embletonia pulchra*, *Antiopa hyalina*, and *Thecacera pennigera*. The floating fauna retains its recent character, *Muggiæa atlantica*, *Evadne Nordmanni* and Ophiuroid *Plutei* having been especially plentiful. The larvæ of *Polygordius*, *Magelona*, *Nerine*, *Phoronis* and of several Crustacea Decapoda have been taken; and Müller's Polyclad larvæ have made their first appearance, although as yet only in small numbers. *Pilidium* has been scarce, but other Nemertine larvæ fairly numerous. *Doliolum Tritonis*, first recorded a fortnight since, has been represented by several specimens in almost every haul of the tow-nets. The following animals are now breeding:—The Polyclads *Eurylepta cornuta* and *Stylostomum variabile*, the Polychæte *Ophryotrocha* (in the aquarium), and the parasitic Isopod *Pleurocrypta Galatheæ*. The Gymnoblastic Hydroids *Perigonimus repens* and *Podocoryne carnea* are giving off medusæ.

THE additions to the Zoological Society's Gardens during the past week include a Malayan Bear (*Ursus malayanus*, ♀) from Malacca, presented by Mr. E. Sydney Wooduviss; a Feldegg's Falcon (*Falco feldeggi*) from Morocco, and two White-shafted Francolins (*Francolinus leucoscepus*, ♀ ♀) from North-east Africa, presented by Lord Lilford, F.Z.S.; two Common Buzzards (*Buteo vulgaris*) from Europe, presented by Mrs. Henry Goodbun; a Ring Ouzel (*Turdus torquatus*, ♂) from British Isles, presented by Mr. Samuel Radcliffe; two Sulphury Tyrants (*Pitangus sulphuratus*) from South America; a Chukar Partridge (*Caccabis chukar*) from North-west India, and a Bamboo Partridge (*Bambusicola thoracica*) from North China, presented by Mr. H. H. Sharland; a Land Rail (*Crex pratensis*) from British Isles, presented by Mr. W. Stanley; an Arabian Baboon (*Cynocephalus hamadryas*, ♀) from Arabia, and a Hairy Tapir (*Tapirus roulini*) from Columbia, deposited; two Sun Bitterns (*Europyga helias*, ♂ ♀) from South America, four Patagonian Cavies (*Dolichotis patachonica*, ♂ ♂ ♀ ♀) bred in France; an Elliot's Pheasant (*Phasianus ellioti*, ♂) from China, three Chilian Teal (*Querquedula creccoides*) from Antarctic America, and two Viscachas (*Lagostomus trichodactylus*, ♂ ♀) from Buenos Ayres, purchased.

OUR ASTRONOMICAL COLUMN.

THE TRANSIT OF VENUS OF 1874.—The reports and drawings of the New South Wales observers of this transit have already been published by the Royal Astronomical Society, so that the volume which we have received, containing the observations, published by authority of her Majesty's Government in New South Wales, cannot be looked upon as containing much that is new. Mr. Russell, the Government astronomer, under whose direction this work has been compiled, seems to have taken great pains in bringing it out, for besides a long introduction summing up the results, and separate accounts of each of the reports, the book is illustrated with several photographs and drawings, a frontispiece containing photographs of the observers, and is bound in a very elaborate cover. The value of this publication lies in the fact that each observer's record is published in full, and is accompanied by numerous printed diagrams, which help to make more clear the various descriptions of phenomena that were noticed. Passing over the observations of contacts, we may refer to some of the physical phenomena which seemed to have claimed attention. With regard, first, to the black drop, it seems that only those who were using telescopes of small aperture, 1½ to 2 inch, and low power eyepieces, saw it, while on the photographs not the slightest trace of it could be seen. The evidence, as far as the New South Wales observations go, shows, as Mr. Russell states, that "the black drop does not seem to be due to the atmospheric conditions, but rather to the imperfections of telescopes of small apertures and low power." The curious "faint tremulous shaking," as noticed at the times of the planet's ingress and egress, are put down to the temporary unsteadiness in the atmosphere. Three important phenomena which seem to have been generally observed were the rings of light and the halo seen surrounding the planet, and the ring of light round that part of the planet projected on the sky. Mr. Russell is of opinion that the atmosphere of Venus probably does not extend far enough to produce the observed phenomena of the halo, but, perhaps, a part of it could be attributed to the haze in the atmosphere caused by the forming of moisture at that time. The bright ring, described as very brilliant, was found to affect the chemicals more than the sun itself, as shown on the photographic plates; its brilliancy accounts for it being only seen on the limb not projected on the sun, and it is suggested that perhaps under favourable conditions this halo might be seen when the planet is lost in the sunlight.

THE PLANET VENUS.—Some time ago we noticed in these columns a short monograph on the "Planet Jupiter and his